UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/521,582	WU ET AL.
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2008*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-22,24-26 and 44-52* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *5-22,24-26 and 44-52* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *6/18/2008*.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the amendment filed on April 11, 2008. Claims 5-22,

24-26 and 44-52 are pending and have been considered below.

Response to Arguments

2.   Applicant's amendment has corrected the specification to include drawing

description for figure 12. Therefore, the objection to the specification is withdrawn.

3.   The informalities in the objected claims 9-10 and 15-16 are corrected and claims

1-4 are cancelled. Therefore, the objection to the claims is withdrawn.

4.   Applicant's arguments with respect to claims 5-22, 24-26 and 44-52 have been

considered but are moot in view of the new ground(s) of rejection necessitated by the

amendment.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   Claims 5-22, 24-26 and 44-52 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

7.   Amended Independent claims 5, 11, 17, 24, 25 and 26 recites in the preamble

that; (...a received block ...had a prefix, a payload, and a suffix that was not identical to

its prefix...) and in the body of claim(s) recites; (...determining synthesized ... that would

have been received if the transmitted suffix had been identical to the transmitted

prefix...). It is unclear what applicant is trying to say, the transmitted block had un-

identical prefix and suffix, and then in the receiver determining synthesized block for

identical prefix and suffix in the transmitted data?

8.   Also, otherwise if the receiver is treating all received data as containing identical

prefix and suffix then why the transmitter is sending un-identical prefix and suffix.

9.   Furthermore, the use of "...would have..." in the claim(s) makes it unclear, it is

suggested to make the claim more clear for understanding how the receiver is treating

the transmitted data.

        Appropriate correction is required.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Baum et al. (US 2002/0126741) in view of Feinleib (US 6,037,932).

        Regarding claim 5:

        As shown in figures 2-4 and figure 8, Baum et al discloses a method of

equalizing a received block that when it was transmitted through a channel had a prefix,

a payload and a suffix (paragraph 0020), the received block having a received prefix, a

payload, and a suffix/postfix (paragraphs 0020-0021 and 0024-0026), the method

comprising the steps of:

determining a synthesized portion of a synthesized block that would have been

received if the suffix of the scrambled block had been identical to the prefix (paragraphs

0020, 0026-0028) when the scrambled block was transmitted, the synthesized block

having a prefix, a payload/data, and a suffix corresponding to the prefix, the payload,

and the suffix of the received scrambled block, and the synthesized portion selected

from the group consisting of the prefix, the payload, and the suffix of the synthesized

block (paragraphs 0024-0026);

forming the synthesized block (figure 8; paragraphs 0034-0036) from the

synthesized portion and a portion of the received scrambled block by appending the

payload and suffix of the received scrambled block to the synthesized portion to form

the synthesized block if the selected synthesized portion is the prefix of the synthesized

block (paragraphs 0024-0028), the suffix of the received scrambled block to the

synthesized portion to form the Synthesized block if the selected synthesized portion is

the payload of the synthesized block, and the synthesized portion to the payload of the

received scrambled block to form the synthesized block (paragraphs 0035 and 0088) if

the selected synthesized portion is the suffix of the synthesized block;

determining a discrete Fourier transform (325 in figures 3 and 4; figure 9) of the

synthesized block to obtain a determined discrete Fourier transform;

performing a frequency domain equalization (330 in figures 3 and 4) on the

determined discrete Fourier transform; and

determining an inverse discrete Fourier transform (335 in figures 3 and 4) of the result of the frequency domain equalization to obtain an estimate of the scrambled payload that was transmitted.

Baum discloses all of the subject matter as described above except for specifically teaching that received block that when it was transmitted through a channel had a prefix, a payload and a suffix that was not identical to its prefix (This is part of the preamble, that have little if any patentable weight as compare to body of the claim).

However, Feinleib in the same field of endeavor discloses a system and method for sending data over computer network where the data contains a prefix, a payload and a suffix that was not identical to its prefix (see figure 1, prefix 5 bytes and suffix 0,1, 2 or 28 bytes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Feinleib in the Baum system to send data with prefix that has a different length than the suffix for frequency domain equalization in the receiver because different uses makes the size of prefix and suffix different and serves to make the system performance better, as the prefix contains information about the data as about structure, type of data and the suffix contains error detection and correction data for the receiver.

Regarding claim 6:

Baum et al discloses all of the subject matter as described above and further discloses that the prefix and the suffix of the transmitted scrambled block are known (figure 6; paragraphs 0028, 0071 and 0088).

Regarding claim 7:

Baum et al discloses all of the subject matter as described above and further discloses that the channel has a known channel response length and the prefix and suffix of the transmitted scrambled block have lengths at least equal (paragraph 0033) to the channel response length.

Regarding claim 8:

Baum et al discloses all of the subject matter as described above and further discloses that the prefix and suffix of the transmitted scrambled block each have the same length, which is equal to the channel response length (paragraphs 0033 and 0081).

Regarding claim 9:

Baum et al discloses all of the subject matter as described above and further discloses that the scrambled block is represented by a sequence of data symbols and the prefix of the synthetic block is determined by sending a sequence of data symbols that represents the suffix (paragraph 0034) of the transmitted scrambled block followed by a sequence of data symbols that represents the prefix (paragraph 0035) of the transmitted scrambled block through a model of the channel and retaining the portion of the resulting sequence corresponding to the sequence of data symbols that represents the prefix as the prefix of the synthetic block (paragraph 0093).

12.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baum et

al. (US 2002/0126741) in view of Feinleib (US 6,037,932) as applied to claim 9 above,

and further in view of Dobson et al. (US 6,603,811).

Regarding claim 10:

Baum et al discloses all of the subject matter as described above except for

specifically teaching that the channel is modeled by an FIR filter.

However, Dobson et al in the same field of endeavor discloses a system and

method for low complexity frequency domain equalizer where the communication

channel is modeled by an FIR filter (abstract; column 2, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to model the channel as an FIR filter in order to get the characteristics

of the FIR filter that distorts the transmitted signal and the distortion is removed by de-

convolution of channel response via frequency domain multiplication.

13.   Claims 11-15 and 17-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Baum et al. (US 2002/0126741) in view of Feinleib (US 6,037,932)

further in view of Moon et al. (US 2006/0050776).

Regarding claims 11 and 17:

Baum et al discloses a method of equalizing a received scrambled block that

when it was transmitted through a channel had a prefix, a payload and a suffix

(paragraph 0020), the scrambled block having a prefix, a payload, and a suffix

(paragraphs 0020-0021 and 0024-0026), the method comprising the steps of:

determining a synthesized payload of a synthesized block that would have been received if the suffix of the scrambled block had been identical to the prefix when the scrambled block was transmitted (paragraphs 0020, 0026-0028);

determining a discrete Fourier transform (325 in figures 3 and 4; figure 9) of the synthesized block to obtain a determined discrete Fourier transform;

performing a frequency domain equalization (330 in figures 3 and 4) on the determined discrete Fourier transform; and

determining an inverse discrete Fourier transform (335 in figures 3 and 4) of the result of the frequency domain equalization to obtain an estimate of the scrambled payload that was transmitted.

Baum et al discloses all of the subject matter as described above and further discloses forming the synthesized block from the synthesized payload and the received scrambled block by replacing the payload of the received scrambled block (paragraphs 0043 and 0046-0047) with the synthesized payload, except for specifically teaching that, received block that when it was transmitted through a channel had a prefix, a payload and a suffix that was not identical to its prefix (This is part of the preamble, that have little if any patentable weight as compare to body of the claim); and removing the prefix of the received scrambled block.

However, Feinleib in the same field of endeavor discloses a system and method for sending data over computer network where the data contains a prefix, a payload and a suffix that was not identical to its prefix (see figure 1, prefix 5 bytes and suffix 0,1, 2 or 28 bytes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the teachings of Feinleib in the Baum system to send data with prefix that has a different length than the suffix for frequency domain equalization in the receiver because different uses makes the size of prefix and suffix different and serves to make the system performance better, as the prefix contains information about the data as about structure, type of data and the suffix contains error detection and correction data for the receiver.

However, Moon et al in the same field of endeavor discloses a system and method for optimally estimating cyclic prefixes where the scrambled signal is sent over the communication channel and further shows removing the prefix of the received scrambled block (figure 1; paragraph 0013).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to remove the prefix of the received scrambled signal in order to get the clean transmission signal as the prefix were added in the scrambled signal to prevent the influence of inter-symbol interference in the communication channel are no longer required in the received signal.

Regarding claims 12 and 18:

Baum et al discloses all of the subject matter as described above and further discloses that the prefix and the suffix of the transmitted scrambled block are known (figure 6; paragraphs 0028, 0071 and 0088).

Regarding claims 13 and 19:

Baum et al discloses all of the subject matter as described above and further

discloses that the channel has a known channel response length and the prefix and

suffix of the transmitted scrambled block have lengths at least equal (paragraph 0033)

to the channel response length.

Regarding claims 14 and 20:

Baum et al discloses all of the subject matter as described above and further

discloses that the prefix and suffix of the transmitted scrambled block each have the

same length, which is equal to the channel response length (paragraphs 0033 and

0081).

Regarding claims 15 and 21:

Baum et al discloses all of the subject matter as described above and further

discloses that the scrambled block is represented by a sequence of data symbols and

the prefix of the synthetic block is determined by sending a sequence of data symbols

that represents the suffix (paragraph 0034) of the transmitted scrambled block followed

by a sequence of data symbols that represents the prefix (paragraph 0035) of the

transmitted scrambled block through a model of the channel and retaining the portion of

the resulting sequence corresponding to the sequence of data symbols that represents

the prefix as the prefix of the synthetic block (paragraph 0093).

14.   Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Baum et al. (US 2002/0126741) in view of Feinleib (US 6,037,932) in view of Moon

et al. (US 2006/0050776), as applied to claims 15 and 21 above, further in view of

Dobson et al. (US 6,603,811).

Regarding claims 16 and 22:

Baum et al discloses all of the subject matter as described above except for

specifically teaching that the channel is modeled by an FIR filter.

However, Dobson et al in the same field of endeavor discloses a system and

method for low complexity frequency domain equalizer where the communication

channel is modeled by an FIR filter (abstract; column 2, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to model the channel as an FIR filter in order to get the characteristics

of the FIR filter that distorts the transmitted signal and the distortion is removed by de-

convolution of channel response via frequency domain multiplication.

15.   Claims 24-26 and 44-52 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Baum et al. (US 2002/0126741) in view of Feinleib (US 6,037,932)

further in view of Moon et al. (US 2006/0050776) and, further in view of Mary (US

5,412,724).

Regarding claims 24-26:

Baum et al discloses a method of transmitting a payload through a channel to a

receiver, comprising the steps of:

forming a block in which the transmitted payload is preceded in the block by a

prefix and followed in the block by a transmitted suffix (paragraph 0020);

transmitting the scrambled block through the channel to the receiver to obtain a

received block (paragraphs 0020-0021 and 0024-0026) received prefix, payload and

suffix; and

at the receiver, equalizing (330 in figures 3 and 4) the received block by

determining a synthesized prefix of synthesized block that would have been received if

the scrambled suffix had been identical to the scrambled prefix (paragraphs 0020, 0026-

0028) when the block was transmitted, the synthetic block having a prefix, a payload,

and a suffix corresponding the prefix, the payload, and the suffix of the received

scrambled block, and the synthesized portion selected from the group consisting of the

prefix, the payload, and the suffix of the synthetic block, forming an intermediate block

from the synthesized portion and a portion of the received scrambled block by

appending the payload and suffix of the received scrambled block to the synthesized

portion to form the intermediate block (figure 8; paragraphs 0034-0036 and 0088) if the

synthesized portion is the prefix (paragraphs 0024-0028), the suffix of the received

scrambled block to the synthesized portion to form the intermediate block if the

synthesized portion is the payload, and the synthesized portion to the payload of the

received scrambled block to form the intermediate block if the synthesized portion is the

suffix; and

determining a discrete Fourier transform (325 in figures 3 and 4; figure 9) of the

synthesized block to obtain a determined discrete Fourier transform; performing a

frequency domain equalization (330 in figures 3 and 4) on the determined discrete

Fourier transform; and determining an inverse discrete Fourier transform (335 in figures

3 and 4) of the result of the frequency domain equalization to obtain an estimate of the

scrambled payload that was transmitted.

Baum et al discloses all of the subject matter as described above except for

specifically teaching that, (1) transmitted block that had a prefix, a payload and a suffix

that was not identical to its prefix (This is part of the preamble, that have little if any

patentable weight as compare to body of the claim); (2) scrambling the block prior to

transmission to form a scrambled block having scrambled prefix, payload and suffix;

and (3) unscrambling the estimate of the scrambled payload to recover the transmitted

data payload.

However, regarding item (1) above, Feinleib in the same field of endeavor

discloses a system and method for sending data over computer network where the data

contains a prefix, a payload and a suffix that was not identical to its prefix (see figure 1,

prefix 5 bytes and suffix 0,1, 2 or 28 bytes).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to use the teachings of Feinleib in the Baum system to send data with

prefix that has a different length than the suffix for frequency domain equalization in the

receiver because different uses makes the size of prefix and suffix different and serves

to make the system performance better, as the prefix contains information about the

data as about structure, type of data and the suffix contains error detection and

correction data for the receiver.

Regarding item (2) above, Mary discloses a system and method for digital multiplex signal broadcast where the prefix and or suffix are added before scrambling (see 26, 28 32 in figure 2; column 3 line 64 – column 4 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement teachings of Mary to add prefix and suffix before scrambling in the transmitter of Baum to make it possible to simplify treatment of signal and improve security and to have predetermined treatment on the signal before transmission or broadcasting.

However, regarding item (3) above Moon et al in the same field of endeavor discloses a system and method for optimally estimating cyclic prefixes where the scrambled signal is sent over the communication channel (110 in figure 1) and unscrambling the estimate of the scrambled payload to recover the transmitted data payload (260 in figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to scrambling the block prior to transmission and unscrambling the estimate of the scrambled payload to recover the transmitted data payload in order to take advantage of the scrambling as is facilitates complete transmission of data without errors.

Regarding claims 44, 47 and 50:

Baum et al discloses all of the subject matter as described above and further discloses that the prefix and the suffix of the transmitted scrambled block are known (figure 6; paragraphs 0028, 0071 and 0088).

Regarding claims 45, 48 and 51:

Baum et al discloses all of the subject matter as described above and further

discloses that the channel has a known channel response length and the prefix and

suffix of the transmitted scrambled block have lengths at least equal (paragraph 0033)

to the channel response length.

Regarding claims 46, 49 and 52:

Baum et al discloses all of the subject matter as described above and further

discloses that the prefix and suffix of the transmitted scrambled block each have the

same length, which is equal to the channel response length (paragraphs 0033 and

0081).

Conclusion

16.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

a.   Isson (US 2002/0191581) discloses a system and method for MC/CDMA data

transmission where data to be transmitted contains prefix, payload and suffix that may

not be identical to the prefix (figure 3; paragraphs 0042 and 54).

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to HIRDEPAL SINGH whose telephone number is (571)

270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off)

8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611